High Voltage NPN Epitaxial Planar Transistor

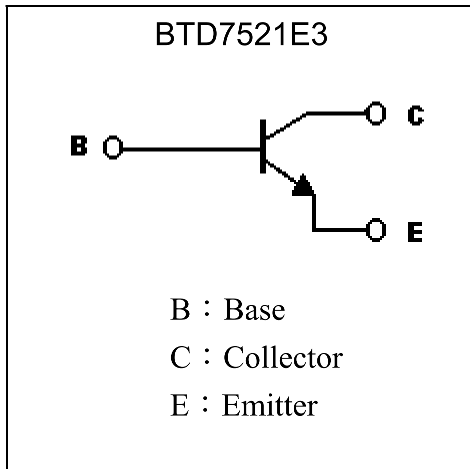
BTD7521E3

BV_{CEO}	90V
I_C	10A
$R_{CE(SAT)}$	50mΩ(max)

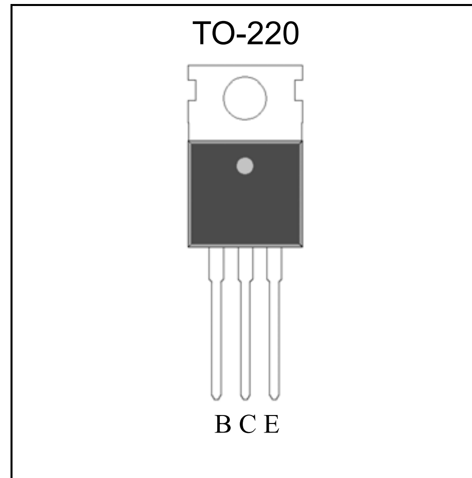
Features

- High BV_{CEO}
- Very high current gain
- Pb-free lead plating package

Symbol

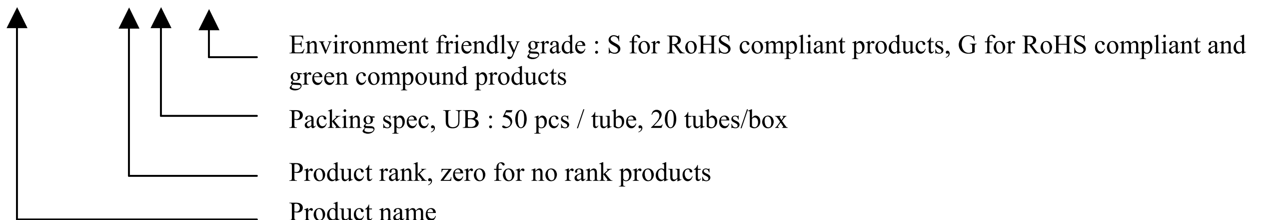


Outline



Ordering Information

Device	Package	Shipping
BTD7521E3-0-UB-X	TO-220 (Pb-free lead plating)	50 pcs / tube, 20 tubes/ box , 4 boxes/carton



Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V_{CBO}	90	V
Collector-Emitter Voltage	V_{CEO}	90	V
Emitter-Base Voltage	V_{EBO}	9	V
Collector Current (DC)	I_C	10	A
Collector Current (Pulse)	I_{CP}	20 (Note)	
Power Dissipation @ T_A=25℃	P_D	2	W
Power Dissipation @ T_C=25℃	P_D	80	
Thermal Resistance, Junction to Ambient	$R_{θJA}$	62.5	°C/W
Thermal Resistance, Junction to Case	$R_{θJC}$	1.56	°C/W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-55~+150	°C

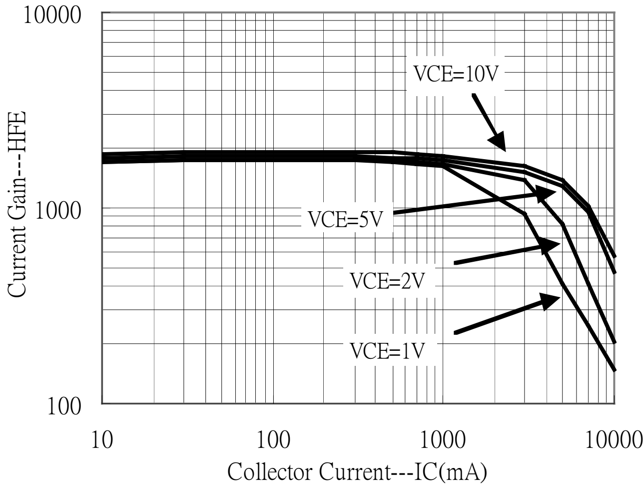
Note : Single Pulse , Pw≦300μs,Duty≦2%.

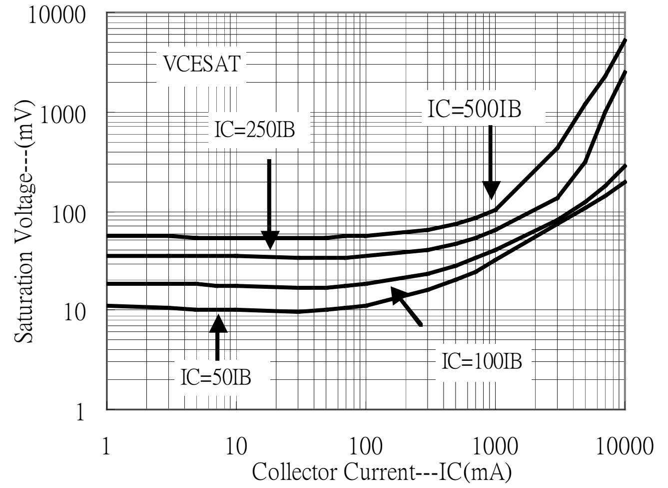
Characteristics (Ta=25°C)

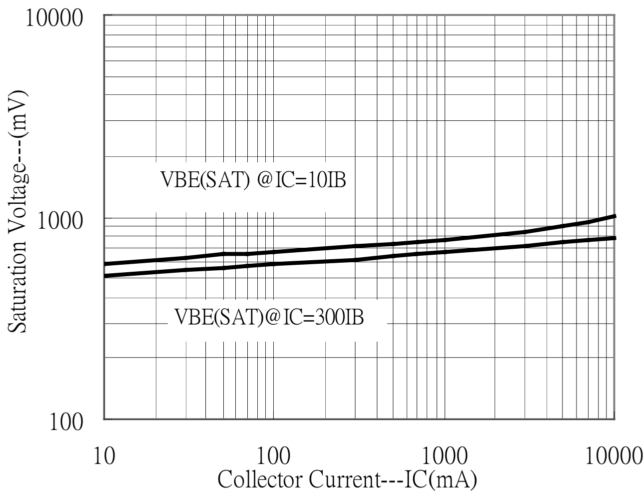
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	90	-	-	V	I_C=1mA, I_E=0
BV_{CEO}	90	-	-	V	I_C=10mA, I_B=0
BV_{EBO}	9	-	-	V	I_C=100μA, I_C=0
I_{CBO}	-	-	10	μA	V_{CB}=90V, I_E=0
I_{EBO}	-	-	100	nA	V_{EB}=7V, I_C=0
*$V_{CE(sat)}$	-	135	250	mV	I_C=5A, I_B=50mA
*$R_{CE(sat)}$	-	27	50	mΩ	I_C=5A, I_B=50mA
*$V_{CE(sat)}$	-	190	300	mV	I_C=5A, I_B=30mA
*$V_{CE(sat)}$	-	470	650	mV	I_C=5A, I_B=20mA
*$V_{BE(sat)}$	-	0.74	0.9	V	I_C=6A, I_B=10mA
*h_{FE}	1000	-	-	-	V_{CE}=5V, I_C=1A
*h_{FE}	600	-	-	-	V_{CE}=5V, I_C=5A
*h_{FE}	300	-	-	-	V_{CE}=5V, I_C=10A
Cob	-	130	-	pF	V_{CB}=10V, f=1MHz

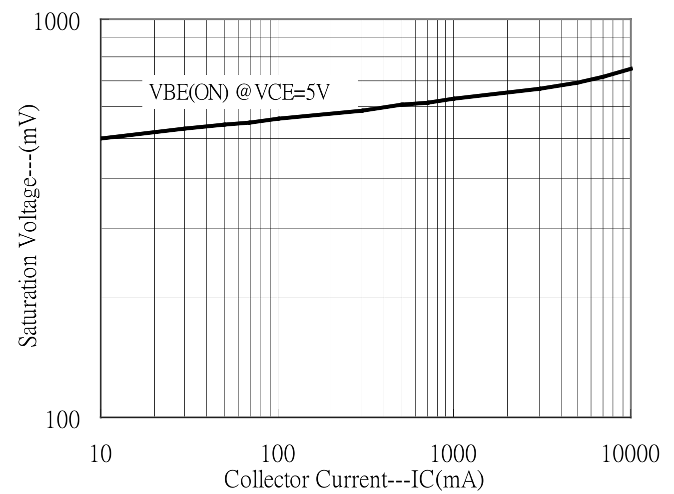
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

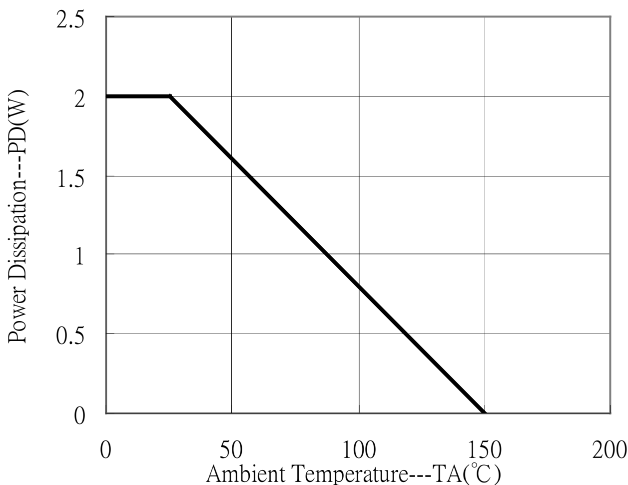
Typical Characteristics

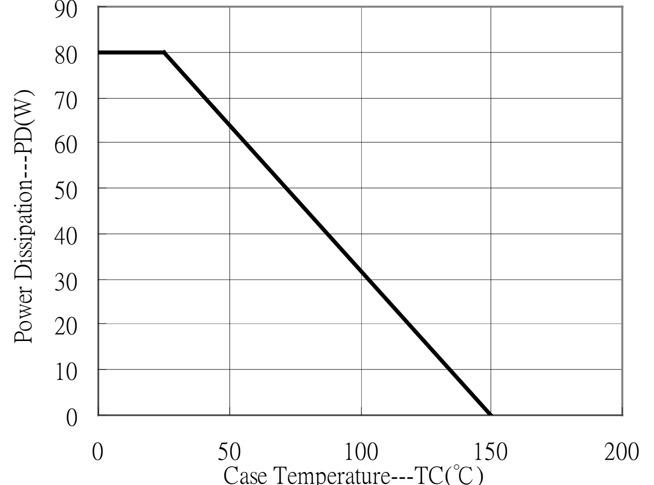








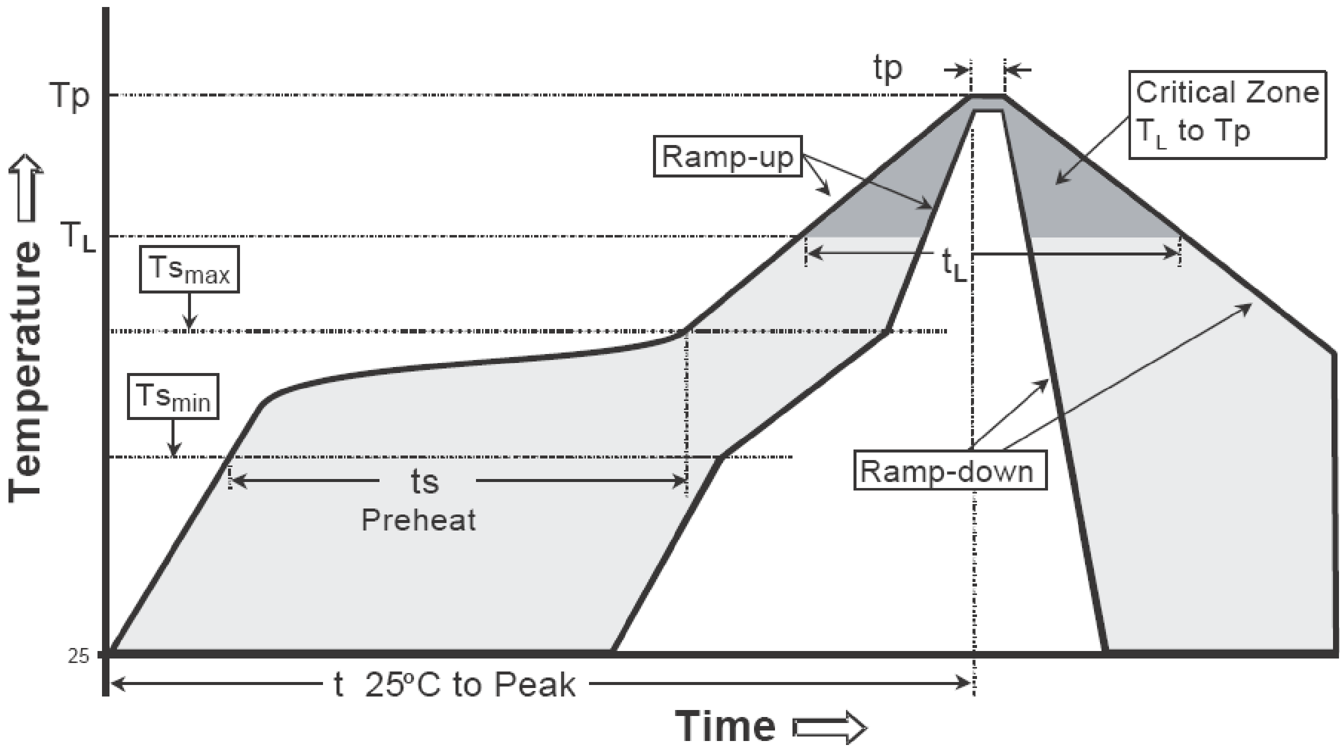




Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

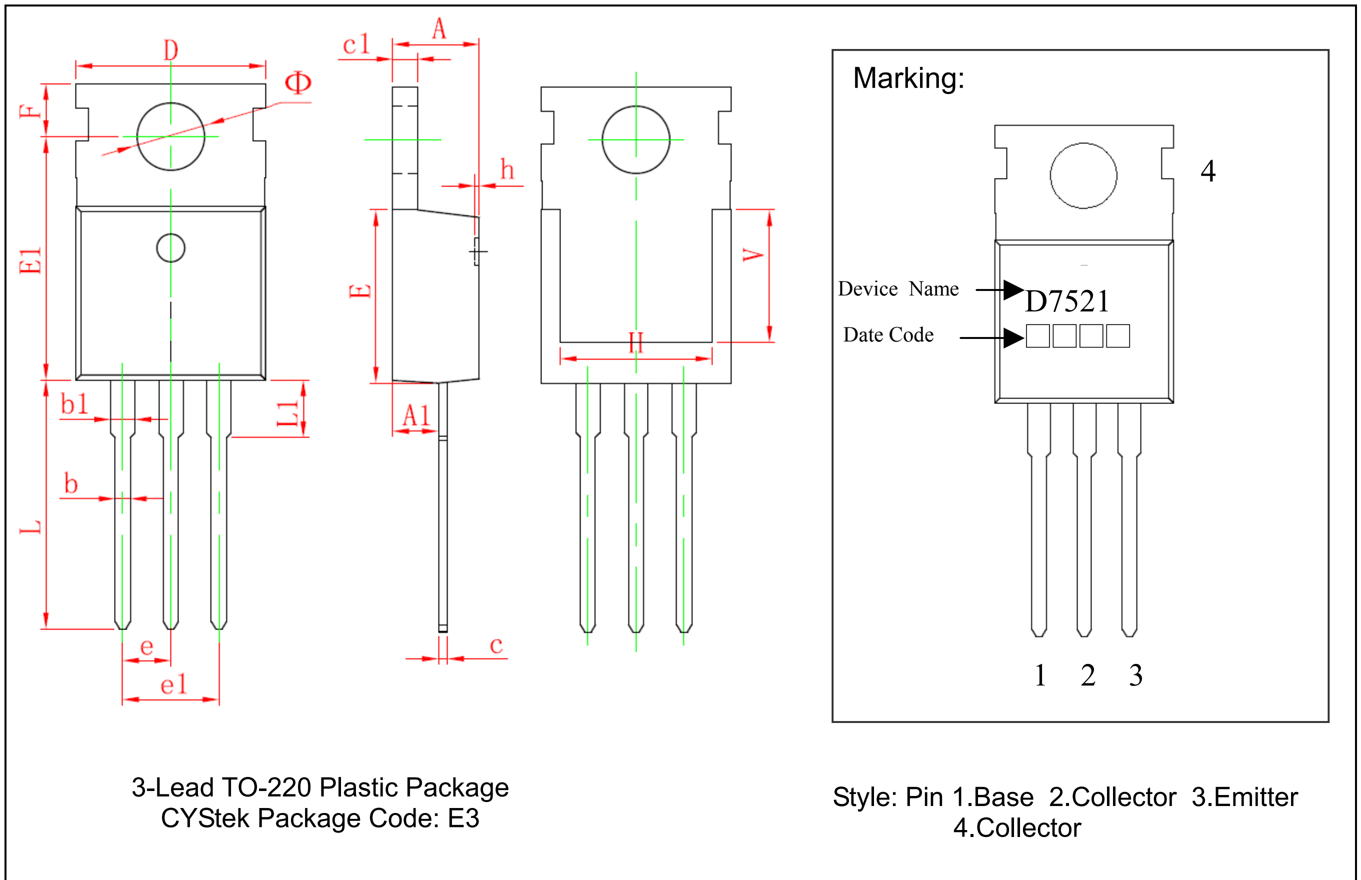
Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(T_S min) −Temperature Max(T_S max) −Time(ts_{min} to ts_{max})	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
Time maintained above: −Temperature (T_L) − Time (t_L)	183°C 60-150 seconds	217°C 60-150 seconds
Peak Temperature(T_P)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

TO-220 Dimension



3-Lead TO-220 Plastic Package
CYStek Package Code: E3

Style: Pin 1.Base 2.Collector 3.Emitter 4.Collector

*: Typical

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181	e	2.540*		0.100*	
A1	2.250	2.550	0.089	0.100	e1	4.980	5.180	0.196	0.204
b	0.710	0.910	0.028	0.036	F	2.650	2.950	0.104	0.116
b1	1.170	1.370	0.046	0.054	H	7.900	8.100	0.311	0.319
c	0.330	0.650	0.013	0.026	h	0.000	0.300	0.000	0.012
c1	1.200	1.400	0.047	0.055	L	12.900	13.400	0.508	0.528
D	9.910	10.250	0.390	0.404	L1	2.850	3.250	0.112	0.128
E	8.950	9.750	0.352	0.384	V	7/500	REF	0.295	REF
E1	12.650	12.950	0.498	0.510	Φ	3.400	3.800	0.134	0.150

Notes: 1.Controlling dimension: millimeters.
2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead: Pure tin plated.
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0.

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